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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,042	12/04/2006	Joachim Bamberg	011235.56870US	2751
23911 7590 10/07/2009 CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300				
EXAMINER				
CHANG, RICK KILTAE				
ART UNIT		PAPER NUMBER		
3726				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/555,042

**Applicant(s)**

BAMBERG, JOACHIM

**Examiner**

Rick K. Chang

**Art Unit**

3726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 5/8/09

### **DETAILED ACTION**

#### **Priority**

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on April 30, 2003. It is noted, however, that applicant has not filed a certified copy of the German Patent Application No. 10319495.9 application as required by 35 U.S.C. 119(b).

#### ***Specification***

2. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

#### **Drawings**

3. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any

required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 9, 14, 17, 22, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al. (US Pat. No. 5,143,563) in view of Hegner et al. (US Pat. No. 5,351,938).

Regarding claim 9, Krueger et al. in view of Hegner et al. broadly discloses a method to manufacture a component or semi-finished part for a gas turbine, in particular for an aircraft engine, by casting (column 5, lines 28-40). It is noted that Krueger et al. does not specifically disclose a smelting crucible that is manufactured of boron nitride. However, Hegner et al. discloses a crucible manufactured of boron nitride (column 2, lines 5-8). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the

references of Krueger et al. with Hegner et al. as Krueger et al. discloses that casting or forging of a super alloy may be used to manufacture an engine disk for use in an aircraft (Krueger et al.: column 1, lines 13 and 14; column 5, lines 28-40) and Hegner et al. utilizes a casting technique for alloys that prevents the alloy from reacting with the crucible (Hegner et al.: column 2, lines 38-51) which will inherently create a product with less inclusions.

Regarding claim 14, Krueger et al. broadly disclose the component or semi-finished part is manufactured of a super alloy (column 3 lines 43-47).

Regarding claim 17, Krueger et al. broadly discloses a method to manufacture a component of a gas turbine engine by casting (column 5 lines 28-40). It is noted that Krueger et al. does not specifically disclose a smelting crucible that is made of boron nitride. However, Hegner et al. discloses a crucible that is made of boron nitride (column 2 lines 5-8). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Krueger et al. with Hegner et al. as Krueger et al. discloses that casting or forging of a super alloy may be used to manufacture an engine disk for use in an aircraft (Krueger et al.: column 1, lines 13-14; column 5, lines 28-40) and Hegner et al. utilizes a casting technique for alloys that prevents the alloy from reacting with the crucible (Hegner et al.: column 2 lines 38-51) which will inherently create a product with less inclusions.

Regarding claim 22, Krueger et al. broadly disclose the component is manufactured of a super alloy (column 3, lines 43-47).

Regarding claim 23, Krueger et al. broadly disclose the component is an engine disk (column 3 lines 43-47).

Regarding claim 25, Krueger et al. broadly disclose the casting includes the step of forging (Krueger column 5 lines 28-40).

6. Claims 10-12, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al. (US Pat. No. 5,143,563) in view of Hegner et al. (US Pat. No. 5,351,938) and further in view of Lassow et al. (US Pat No. 5,975,188).

Regarding claim 10, it is noted that the teachings of Krueger et al. and Hegner et al. do not specifically disclose the component or semi-finished part is subsequently subjected to an inspection for an undesired inclusion. However, Lassow et al. broadly discloses the component or semi-finished part is subsequently subjected to an inspection for an undesired inclusion (column 2, lines 7-10). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 11, it is noted that the teachings of Krueger et al. and Hegner et al. do not specifically disclose the component or semi-finished part is examined for the undesired inclusion with an x-ray test. However, Lassow et al. broadly discloses the component or semi-finished part is examined for the undesired inclusion with an x-ray test (column 1, lines 61-66). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and

Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 12, it is noted that the teachings of Krueger et al. and Hegner et al. do not specifically disclose the component or semi-finished part is examined for the undesired inclusion with a neutron radiography test. However, Lassow et al. broadly discloses the component or semi-finished part is examined for the undesired inclusion with a neutron radiography test (column 1, lines 61-66 and column 2, lines 18-20). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 16, the teachings of Krueger et al. and Hegner et al. teach a method to manufacture a component or semi-finished part for a gas turbine of a super alloy by casting, a smelting crucible that is manufactured of boron nitride is used in casting. It is noted that the teachings of Krueger et al. and Hegner et al. do not specifically disclose inspecting the component for undesired inclusion. However, Lassow et al. broadly discloses inspecting the component for undesired inclusions (column 2, lines 7-10; it is noted that the inclusions would be boron nitride with the use of a boron nitride crucible, versus the ceramic one used in Lassow, see column 2, lines 1-4). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques

described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 18, the teachings of Krueger et al. and Hegner et al. teach the presence of boron nitride. It is noted that the combined references of Krueger et al. and Hegner et al. do not specifically disclose inspecting the component for inclusions. However, Lassow et al. broadly discloses inspecting the component for inclusions (column 2, lines 7-10; it is noted that the inclusions would be boron nitride with the use of a boron nitride crucible, versus the ceramic one used in Lassow, see column 2, lines 1-4). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 19, it is noted that the teachings of Krueger et al. and Hegner et al. do not specifically disclose the step of inspecting includes testing with an x-ray test. However, Lassow et al. broadly discloses the step of inspecting includes testing with an x-ray test (column 1, lines 61-66). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions



adversely affect mechanical properties of the material (Lassow et al.: column 1, lines 24-25 and 45-50).

Regarding claim 20, it is noted that the teachings of Knleger et al. and Hegner et al. do not specifically disclose the step of inspecting includes testing with a neutron radiography test. However, Lassow et al. broadly discloses the step of inspecting includes testing with a neutron radiography test (column 1, lines 61-66 and column 2, lines 18-20). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Lassow et al. as any inclusions that may occur from casting techniques described in both Hegner et al. and Lassow et al. need to be identified for the inherent reason that such inclusions adversely affect mechanical properties of the material (Lassow et al.: column 1 lines 24-25 and 45-50).

7. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al. (US Pat No. 5,143,563) in view of Hegner et al. (US Pat No. 5,351,938), further in view of Lassow et al. (US Pat No. 5,975,188) and furthermore in view of Boone et al. (US Pat No. 3,595,712).

Regarding claim 13, the teachings of Krueger et al., Hegner et al. and Lassow et al. broadly disclose the inspection of the component or semi-finished part (Lassow et al.: column 2, lines 7-10). It is noted that the teachings of Knleger et al., Hegner et al., and Lassow et al. do not specifically disclose a coating process. However, Boone et al. teaches a coating process (column 1, lines 27-32). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al., Hegner et al. and Lassow et al. with Boone et al. as the coating process disclosed in Boone et al. is applied to super

alloys disclosed in Krueger et al. for gas turbine engine applications in order be able to expose components manufactured from these super alloys to elevated temperatures (Boone et al.: column 1, lines 28-33) often seen in aircraft engines.

Regarding claim 21, the teachings of Krueger et al., Hegner et al., and Lassow et al. broadly disclose inspecting the component (Lassow et al: column 2, lines 7-10). It is noted that the combined references of Krueger et al., Hegner et al. and Lassow et al. do not specifically disclose coating the component after the step of casting. However, Boone et al. teaches coating the component after the step of casting (column 1, lines 27-32 and column 3, lines 18-20). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al., Hegner et al. and Lassow et al. with Boone et al. as the coating process disclosed in Boone et al. is applied to super alloys disclosed in Krueger et al. for gas turbine engine applications in order be able to expose components manufactured from these super alloys to elevated temperatures (Boone et al.: column 1, lines 28-33) often seen in aircraft engines.

8. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger et al. (US Pat No. 5,143,563) in view of Hegner et al. (US Pat No. 5,351,938) and further in view of Hessell et al. (US Pat No. 5,897,718).

Regarding claim 15, the teachings of Krueger et al. and Hegner et al. broadly disclose the component or semi-finished part is embodied as an engine disk, which is manufactured of a super alloy by casting plus forging (Krueger et al.: column 5, lines 31-35 and 39-40). It is noted that the combined references of Krueger et al. and Hegner et al. do not specifically teach Udimet 720 LI. However, Hessell et al. teaches Udimet 720 LI (column 1, lines 15-30). Hence it would

have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Hessel et al. as the super alloy Udimet 720 LI disclosed in Hessel, is just a type of super alloy disclosed in Krueger et al.

Regarding claim 24, it is noted that the combined references of Krueger et al. and Hegner et al. do not specifically teach Udimet 720 LI. However, Hessel et al. teaches Udimet 720 LI (column 1, lines 15-30). Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined references of Krueger et al. and Hegner et al. with Hessel et al. as the super alloy Udimet 720 LI disclosed in Hessel, is just a type of super alloy disclosed in Krueger et al.

#### ***Response to Arguments***

9. Applicant's arguments filed 4/29/09 have been fully considered but they are not persuasive.

Col. 2, lines 47-51 of Krueger discloses that using boron nitride overcomes the problem of wetting to prevent fray or even break (col. 2, line 46). Therefore, the motivation stated in the rejection is proper.

The crucible may have a defect or damages after numerous uses that may cause boron nitride to separate from the crucible. Therefore, it would be prudent for one of ordinary skill in the art to inspect the part to ensure there is no undesirable boron nitride inclusion. It is well known in the industry to inspect parts in order to ensure the parts meet the specification.

The applicants are required to submit a certified copy of the foreign document in order to receive priority.

There is no record of Fig. 1 being submitted by the applicants.

### ***Interviews After Final***

10. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

### ***Conclusion***

11. Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity (optional). Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.
12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (571) 272-4564. The examiner can normally be reached on 5:30 AM to 1:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Rick K. Chang/  
Primary Examiner, A.U. 3726

RC  
October 7, 2009